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# *Queletia mirabilis*, a rare gasteroid species in Gran Canaria, Spain

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Abstract — This paper provides the first report of a rare gasteroid taxon, *Queletia mirabilis,* from the Canary Islands, accompanied by color photographs of its macro- and microscopic characteristics and scanning electron micrographs of spore ornamentation and capillitium. A comparison with other similar species of *Queletia* and *Schizostoma* is also given.

Key words — *Agaricaceae, Basidiomycota,* taxonomy

## Introduction

*Queletia mirabilis* is a very rare species. According to Lloyd (1904) and Azema (1990), it was first collected by the mycologist, Perdrizet of Vaudancourt (Oise), in Port de Sochaux (France) around 1868 and sent to Lucien Skeleton, a doctor in Hérimoncourt (Doubs), who eventually passed it to Fries, who classified and named it. This species has very few citations and is considered by some mycologists as "an alien species." *Queletia mirabilis* is known only from France (Dumée & Maire 1913, Mornand 1989, Azema 1990), England (Ramsbottom 1953, Pegler et al. 1995), Italy (Cetto 1980, Sarasini 2005), and USA (White 1901, Lloyd 1904, Coker & Couch 1928). The species has also been described from different authors' herbarium material such as Fischer (1900), Lloyd (1903), Pilát (1955), Moravec (1958) and Jülich (1983). For the first time below, we describe *Q. mirabilis* from the island of Gran Canaria, Canary Islands (Spain), in the Macaronesian region and provide SEM illustrations of its spore and capillitial ultrastructure.

## Materials & methods

The studied specimens have been deposited in the herbaria of AH (University of Alcalá, Spain) and the Botanical Garden "Viera y Clavijo" (Gran Canaria, Spain) and

the personal herbarium of M.A. Ribes (MAR). Glebal tissue was mounted in Hoyer's medium and studied with a Nikon microscope. Spore measurements were made using an oil immersion objective. The scanning electron microscope (SEM) photographs were made according to Moreno et al. (1995).

## Taxonomy

***Queletia mirabilis*** Fr., Öfvers. Förhandl. K. Svenska Vetensk.-Akad. 28: 171 (1872)
Figs. 1–12

Basidiomata scattered to gregarious, stipitate. Pileus globose to subglobose, 3–4 cm in diam., 1.5–2 cm high. Peridium mostly missing, only near the base in contact with foot, composed of a membrane, 3–5 mm thick, with smooth, whitish outer surface; rough inner surface, irregular, brown to ochre, with abundant remains of capillitium and spores. Gleba ocher, abundant, with filaments of whitish capillitium. Dehiscence apical, irregular, without formation of a stoma or defined structure. Stipe 0.7–1.2 × 6–10 cm, cylindrical, curved, fading towards base, not twisted, with a strongly folded surface and appearing torn, ochre and brown, woody. Columella absent.

Basidiospores yellow-ochraceous, globose to subglobose, (4.9–)5.4–6.6 (–7.8) × (4.4–)4.9–6.2(–6.8) µm, excluding ornamentation; Q = 1.0–1.2(–1.4), N = 94, I = 6.0 × 5.5 µm, Q = 1.1, with a prominent hilar appendix, strongly verrucose, with verrucae grouped into conical structures (0.8–)1.1–1.5(–1.7) µm, N = 52, I = 1.3 µm high. Basidia not seen. Capillitium abundant, cylindrical, twisted, wavy-helical without fibulae, ocher, thick-walled, poorly branched and rarely septate, that breaks easily, probably as a result of handling (4.4–)5.6–8.9(–10.3) µm, I = 7.1 µm wide.

SEM revealed spore ornamentation consisting of long rods that join together to form pyramidal structures. This type of spore ornamentation matches *Q. mirabilis* from France deposited at PC (Jülich 1983).

Material examined: **SPAIN**: **Canary Islands**, Gran Canaria, Tejeda, close to the "Presa de la Data" dam, (27º55'52.35"N, 15º39'17.32"W) in sandy soil in grass near dam, flooded all year round with seasonal variations, surrounding vegetation scattered *Pinus canariensis* C. Sm. ex DC., a thicket of legumes [*Teline microphylla* (DC.) PE Gibbs & Dingwall and *Chamaecytisus proliferus* ssp. *meridionalis* Acebes] and "tabaibas" bitter (*Euphorbia regis-juba* Webb & Berthel.), with "verodes" (*Kleinia neriifolia* Haw.), 16-X-2010, leg. M. Cardona Sosa, det. Gabriel Moreno, AH 39331, MAR 161010-25, duplicate in Botanical Garden "Viera y Clavijo" SMGC (Soc. Mycol. Gran Canaria) 11043. **ITALY**: **Friuli-Venezia Giulia,** Udine, Gorizia, Rindenabfällen von auf bei Laubholz Torviscosa, with substrate temperature 38-40º C, 25-VIII-1980, leg. Tarcisio Figar misit B. Cetto, det. Tarcisio Figar, Hanns Kreisel ex Herbarium, duplicate in AH 25235.

Other material studied: ***Queletia andina*** —**ARGENTINA**, **Mendoza**, San Martín, leg. J. Semper, 15-VII-1950, Ruiz Leal 16204 (holotype, BAFC 28711;, isotype, AH 39332). ***Queletia mundkurii*** —**PAKISTAN**, **Punjab**, Ladhar, on ground, 18-VIII-1947, LAH, duplicate in AH 39333.

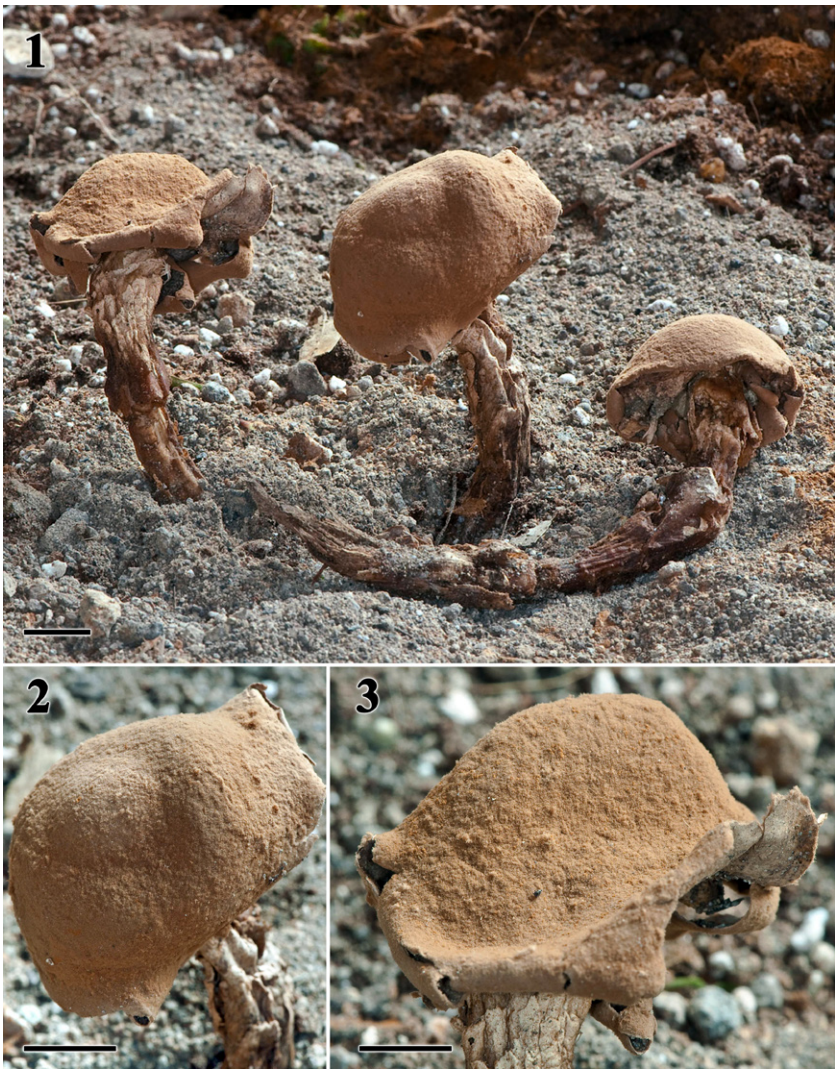
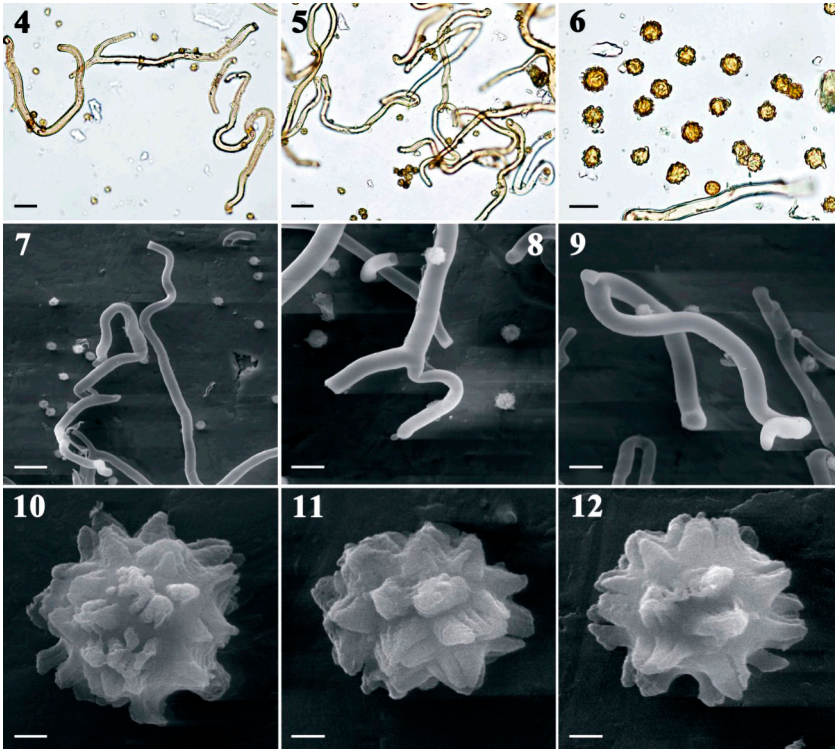



Fig. 1–3: *Queletia mirabilis* (AH 39331).
1. Fruiting bodies. 2–3. Details of gleba (2) and capillitial remnants (3). Scale bars = 0.5 cm.

Comments: Although *Queletia mirabilis* is a rare species, it is easily distinguished by its irregular peridium dehiscence, absence of columella, filamentous, helical-wavy, winding capillitium, and strongly ornamented basidiospores. Development of the fruiting bodies, details of peridium dehiscence, basidia




Figs 4–12: *Queletia mirabilis* (AH 39331).
4-6. Details of capillitium (LM, 4–5) and spores (LM, 6) in distilled water).
7–12. SEM photos: 7–9. Capillitium and branches; 10–12. Spore ornamentation.
Scale bars: 4–6 and 8–9 = 10 µm, 7 = 20 µm, 10–12 = 1 µm.

formation, and development of the spores have been described in detail by Dumée & Maire (1913).

De Toni's (1888: 65) description of *Q. mirabilis* differs from those of other mycologists because he described comparatively larger basidiospores (10–15 µm diam.). In general, the basidiospores are smaller (7.5–9.2 µm including ornamentation) than given by De Toni (1888). The size of the fruiting bodies also differs. According to De Toni (1888), the stipe is 1–2 cm long with a base up to 4.5 cm wide and apex 2.5 cm broad.

This gasteroid fungus is usually found fruiting on bark and wood debris (Cetto 1980, Azéma 1990, Pegler et al. 1995, Sarasini 2005). It rarely produces fruiting bodies on the ground after rains (De Toni 1888), an important character. The sample from the Canary Islands grew in sandy soil that remains waterlogged all year round but with seasonal variations.

The genera *Queletia* Fr. and *Schizostoma* Ehrenb. ex Lév., are closely related by the wavy-helical, aseptate or rarely septate, shortly branched capillitium. However, *Schizostoma* differs in possessing smooth basidiospores and a peridium that becomes irregular and stellate at maturity.

The only other species currently accepted in this genus is *Queletia andina* J.E. Wright, which is characterized by its filamentous, branched capillitium with abundant septa (*Tulostoma* type) that do not break under the pressure and smooth basidiospores. The capillitium of *Schizostoma mundkurii* (S. Ahmad) Long & Stouffer [ ≡ *Queletia mundkurii* S. Ahmad] is similar to that of *Q. mirabilis* but presence of smooth spores and other generic characters of the former differentiate these two species.

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